

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-001852**Date Inspected:** 21-Mar-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

New Tower Shop:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening tower #P263(S). ZPMC report #HSR1 (T)-243, cause for heat straightening mill induced distortion. Heat Straightening is performed by flame straightening by oxygen acetylene.

New Tower Shop:

QA Inspector Brannon randomly observed ZPMC personnel CNC torch cutting 75% natural and 25% oxygen for various pieces for the tower. Piece # P665 (W), P1082 (E), P654 (W), P0182 (W), P667 (S), and P667 (W).

New Tower Shop 114 Meter mock-up:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening tower #P919 (W) ZPMC report #HSR1 (CT)-184, #P858 (W) ZPMC report #HSR1 (CT)-183, #P918 (W) ZPMC report #HSR1 (CT)-182, #P927 (W) ZPMC report #HSR1 (CT)-186 and #A119 (W) ZPMC report #HSR1 (CT)-185, cause for heat straightening mill induced distortion. Heat Straightening is performed by flame straightening by oxygen acetylene using a hand torch.

New Tower Shop 89 Meter Mock-up (CRW072):

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QA Inspector Brannon randomly observed ZPMC qualified welder Mr. He Shi Bing ID#0066243 repair welding at the 89 meter strut –assembly weld joint #MUSB-MA26-29A-1. Mr. He was observed welding in the 2G (horizontal) position utilizing shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class THJ506Fe-1. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Xu Le Feng verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Xu Le Feng to be: preheat temperature of 110°C and welding parameters amps of 185. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-345-SMAW-1G (1F)-FCM-Repair.

New Tower Shop 89 Meter Mock-up

QA Inspector Brannon was informed by ABF Mr. C. K. Chan that lugs welded were magnetic particle (MT) tested by ZPMC and at the top of the vertical weld they found crater cracks at MUB/MA21 G/J weld joint 25 & 26, and 21 & 22. QA Inspector Brannon informed Task Leader Robert Cuellar of the above.

Bay 2

77 & 144 Meter Mock-up:

QA Inspector Brannon observed tower mock-up to be idle during this shift.

Bay 3 - Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening side panel SP332. ZPMC report #HSR1 (B)-294, grid 5BE, welds #001~019, 021, 023, 025 and 027~029, weld map SP0332-001. Cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening by oxygen acetylene using a hand torch.

Bay 3-OBG wide flange beams (splice):

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Li Zhaoqian ID#048810 splice welding at weld wide beam for BP111-001-027 and 029. Mr. Li was observed welding in the 1G (flat) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Xu Xian Ping verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Xu Xian Ping to be: preheat temperature of 20°C and welding parameters amps of 310 volts of 30.6, a travel speed of 307 mm/min and a gas flow of 19L/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2231-B-U2-F.

Bay 3-OBG bottom panel:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various T stiffeners plate to BP083-001, weld joints 007~018 using a shielded metal arc welding (SMAW) process.

Bay 4 – Heat straightening side panel:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening side panel SP20. ZPMC report #HSR1 (B)-082, grid 4BW, welds #001~024, weld map SP020-001. Cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening by oxygen acetylene using a hand

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torch.

Bay 4 Tower 43 Meter Elevation:

QA Inspector Brannon randomly observed ZPMC welder Mrs. Gu Cai Hong ID #054467 welding fill pass's joining SA335 (S) to P459 (S) weld joint # SSD1 SA335-1B. Mrs. Gu was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class MIL800-HPNI, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 180°C and welding parameters amps of 650, volts of 31.0, and a travel speed of 500. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

Bay 7-OBG - Floor Beam I Beam:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Wang Lin Jiang ID #051356 fillet welding FB003-13-004. Mr. Wang was observed welding in the 3F (vertical) position utilizing a Flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 50°C and welding parameters amps of 302, volts of 29.2, a travel speed of 433 mm/min and a gas flow of 21L/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 7-OBG - Floor Beam:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding floor beam diaphragm to flange plates for FB014-05-21 and FB003-01-18 using a shield metal arc welding (SMAW) process.

Bay 8-Tower Diaphragm 28 Meter:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ying ID #045270 groove welding joining SA334(N) to P248(N) weld joint NSD1 SA334-2A. Mrs. Ma was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class MIL800-HPNI, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Xu Bing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 180°C and welding parameters amps of 615, volts of 31.1, and a travel speed of 480. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

Bay 8-Tower Diaphragm 28 Meter:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ying ID #045270 groove welding joining SA326(S) to P632(S) weld joint SSD1 SA326-1A. Mrs. Ma was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class MIL800-HPNI, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Xu Bing

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verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 180°C and welding parameters amps of 609, volts of 31.0, and a travel speed of 479. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

The following digital photograph below illustrates observation of the activities being performed.



Summary of Conversations:

As stated within the report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By: Brannon, Sherri

Quality Assurance Inspector

Reviewed By: Cuellar, Robert

QA Reviewer